## **CLAIMS**

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What we claim is:

1 1.	A communications system,	comprising:
1 1.	11 00	

- a plurality of mobile devices that each include a network subsystem and a 2 positioning subsystem, the network subsystem automatically assembling a wireless 3 network among the mobile devices for information transfer and automatically assigning 4 at least one unique identification number to each mobile device, the positioning 5 subsystem automatically generating position information of each mobile device; and 6 at least one control system coupled for information transfer with the plurality of 7 mobile devices, the control system tracking and mapping individual positions of each 8 mobile device using the position information and identifying each mobile device on the 9 map using the identification number.
- The system of claim 1, wherein communications among the mobile devices and 2. 1
- the control system occur using at least one of High Frequency (HF) communications, 2
- Very High Frequency (VHF) communications, Ultra High Frequency 3
- (UHF)/microwave communications, cellular communications, satellite 4
- communications, and Public Switched Telephone Network (PSTN) communications. 5
- The system of claim 1, wherein the positioning subsystem includes at least one of 3. 1
- a Global Positioning System (GPS), a Radio Frequency Identification/Direction 2
- Finding (RFID/DF) system, an infrared (IR) system, an acoustic system, a triangulation 3
- system, and a signaling system. 4
- The system of claim 1, wherein the information transfer includes voice 4. 1
- information and data. 2
- The system of claim 1, wherein the identification number is a media access 1 5.
- control (MAC) address, wherein the MAC address is associated with routing packets 2
- having modified priorities, wherein the routing packets are high quality packets that 3

4	provide reliable communication between the plurality of mobile devices and the control
5	system.

- 1 6. The system of claim 1, wherein the control system further comprises a graphical
- 2 user interface (GUI) that displays the individual positions of each mobile device on a
- 3 three-dimensional map.
- 7. The system of claim 1, wherein the identification number is a media access
- 2 control (MAC) address, wherein location-based multicast group Internet Protocol (IP)
- addressing is used to map the individual positions of each mobile device within an
- 4 incident scene.

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- 8. A portable communication device, comprising:
- a network system that automatically assembles a wireless network among other portable communication devices and control devices in an area and automatically
- 4 assigns a unique identification number to each portable communication device;
- a communication system that receives and transmits voice and data
- 6 communications over the wireless network using at least one of High Frequency (HF)
- 7 communications, Very High Frequency (VHF) communications, Ultra High Frequency
- 8 (UHF)/microwave communications, cellular communications, satellite
- 9 communications, and Public Switched Telephone Network (PSTN) communications;
- 10 and
- a positioning system that includes Global Positioning System (GPS) components
- and at least one location sensor, the positioning system automatically determining a
- position of the device periodically and automatically transferring the position to at least
- one of the control devices via the wireless network.
- 9. A method for automatically tracking and communicating among mobile devices,
- 2 comprising:
- automatically assembling a wireless network among a plurality of mobile devices
- 4 and control systems in an area, wherein assembling includes adding mobile devices and

5	control systems to the wireless network as they arrive in the area and removing mobile	
6	devices and control systems from the wireless network as they depart the area; receiving voice and data communications from each of the mobile devices of the	
7		
8	wireless network, wherein the data communications include position and identification	
9	information of each mobile device of the wireless network;	
10	tracking a position and status of a mobile device using the position and	
11	identification information; and	
12	generating a map of an engagement and displaying individual positions, tracks,	
13	and identifications of each mobile device of the wireless network using the position and	
14	identification information.	
1	10. The method of claim 9, further comprising:	
2	comparing information of the voice and data communications with historical	
3		
4	generating predictions of engagement progress using results of the comparison;	
5	displaying the predictions on the map; and	
6	updating the historical scenario and response information to include at least one of	
7	the information of the voice and data communications and the generated predictions.	
1	11. The method of claim 9, further comprising:	
2	comparing information of the voice and data communications with historical	
3	scenario and response information;	
4	generating recommended courses of action using results of the comparison;	
5	displaying the recommended courses of action on the map; and	
6	updating the historical scenario and response information to include at least one of	
7	the information of the voice and data communications and the generated recommended	
8	courses of action.	
1	12. The method of claim 9, wherein tracking a position and status further comprises:	
2	generating a historical position trace for each first responder; and	
3.	displaying the position trace on the map.	

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- 1 13. The method of claim 9, further comprising receiving sensor data from at least one
- 2 sensor of at least one mobile device.
- 1 14. The method of claim 13, further comprising:
- 2 comparing the sensor data with historical scenario and response information;
- generating predictions of engagement progress using results of the comparison;
- 4 displaying the predictions on the map; and
- 5 updating the historical scenario and response information to include at least one of
- 6 the sensor data and the generated predictions.
- 1 15. The method of claim 14, further comprising generating recommended courses of
- 2 action using at least one of the results of the comparison and the predictions.